

*With the Author's*

*Kind regards*

*Ch. J. 1880-1889.*

FURTHER

OBSERVATIONS ON STERTOR;

ITS PATHOLOGY AND TREATMENT.

BY ROBERT L. BOWLES, M.D.

“Steritque supinus.”

HORACE.

*(Read before the Royal Medical Chirurgical Society,  
May, 1870.)*

LONDON: 1881



FURTHER

15

OBSERVATIONS ON STERTOR;

ITS PATHOLOGY AND TREATMENT.

By ROBERT L. BOWLES, M.D.

"Stertitque supinus."  
HORACE.

*(Read before the Royal Medical Chirurgical Society,  
May, 1870.)*

LONDON: 1881



FURTHER

## OBSERVATIONS ON STERTOR.

---

IN the forty-eighth volume of the Transactions of the Royal Medical and Chirurgical Society is a Paper entitled "Observations on Stertor." Since the publication of that Paper, if I except a paragraph in the article "Chloroform," in Holmes's System of Surgery, I know of nothing which has been contributed to medical literature on this subject.

In my first Paper only three forms of stertor are defined, Palatine, Pharyngeal, and Mucous Stertor. Professor Lister refers to a "laryngeal stertor" as occurring during a certain stage of the inhalation of chloroform, but as it has no practical connection, so far as I am aware, with the apoplectic and its allied conditions, we will at present dismiss it from further consideration.

The forms of stertor, then, which have a direct connection with the apoplectic state are—the palatine, arising from the vibrations of the soft palate; the pharyngeal, from the gravitation of the tongue into the back of the pharynx, and the mucous stertor, from the presence of mucus or other fluids in the larger air-tubes. These three varieties, whatever their remote cause, are the *immediate* result of a local mechanical condition—a condition which may always and at once be changed, to the great relief of the patients, and sometimes to their permanent recovery. Since adopting this method of management, many other points have developed themselves of the utmost practical importance both to the surgeon and to the physician.

CASE 1.—In October, 1863, Mrs. S ——— was seized with apoplexy. On my arrival, there was a partial return to con-

sciousness, and the left side was found to be paralysed. There was pharyngeal stertor when in the recumbent posture, and she appeared uneasy when placed on her right side, so she was placed on her left, when the stertor ceased. A blister was applied to the nape of the neck, and she remained in this position for nine days. She was now better, and spoke to me. Fearing a bedsore, I desired the nurse to change her position by turning her from her left to her right side. Soon after this was done she was distressed for breath, and the countenance became livid. On my arrival I found the difficulty of breathing gradually increasing, the blistered surface and the ear upon which she had lain of a dark purple hue, and the pulse, which had before been weak and irregular, full and bounding. There were large mucous râles over the whole chest ; she was quite unconscious, and death from suffocation was imminent. Finding that these symptoms supervened upon the change of position, I had her replaced upon her left side, and immediately the pulse sank, the mucous stertor ceased, the breathing was relieved, the lividity of countenance passed away, and the blistered surface, which had been almost black, resumed a bright cherry-red colour. This additional shock, however, proved too much for her, and she died the same day, peaceful and conscious.

The salient points of this interesting case are : (1) That pharyngeal stertor ceased when the patient was placed on her side ; (2) that there was a slow but gradual improvement subsequent to this ; (3) that mucous stertor and imminent death supervened when she was placed on the opposite side ; (4) that relief was instant on resuming her original position ; and (5) that a return to consciousness was coincident with the cessation of stertor ; in other words, on the removal of the respiratory difficulty.

On a careful examination of the chest after she became quiet, I found all râles slowly fade away from the right side, that which was uppermost, and the natural breathing return ; but the left lung, which had been dependent throughout, was dull on percussion and deficient in respira-

tory murmur. The explanation now became clear—viz., that the dependent lung had become filled with some mucous fluid, and that on changing the side the fluid, by gravitation, was finding its way across the trachea to the opposite lung, but in doing so it had been churned into foam by the ingoing air, giving rise to mucous stertor, and that this foam, by filling up the larger bronchial tubes, was quickly causing suffocation with all its usual results.

As a point of management, then, in a case of apoplexy, it would appear necessary to keep the patient on one side, and not to change it; but which side should this be? Healthy people when lying on their side breathe chiefly with the side which is uppermost; for the intercostal and other thoracic muscles of the lower side are fixed between the weight of the body and the bed, and the breathing of this side is almost entirely diaphragmatic.

CASE 2.—Dr. Fitzgerald during his attendance on a case of cancer of the brain finding the breathing much oppressed by mucus in the air-passages, at my suggestion placed the patient on his side, when he became suddenly so much worse that immediate death appeared inevitable. Dr. Fitzgerald repeated the experiment with exactly the same results, and he found that the difficulty arose from mucus in the trachea and larger air-tubes. It was afterwards discovered that the paralysed side was placed upwards. Unfortunately, only the head was examined after death; but I have reason to believe that in hemiplegia from progressive disease of the brain a low form of inflammatory action takes place in the lung of the affected side from disturbed innervation of the pneumogastric nerves.

In a recent case of tubercular mass in the centre of the brain, which was under my care, this was the case, and precisely the same distress as above-mentioned occurred from mucus when the paralysed side was placed upwards. It must be remembered, too, that in placing the paralysed side downwards the injured side of the brain is upwards, and therefore relieved from congestion, a condition always liable to occur when an injured part remains dependent.



Apoplexy, with much mucous stertor, is, I believe, always of the most grave and dangerous character, for it indicates as well as muscular paralysis, loss of function of such vital nerves as the pneumogastric ; and, I believe, the time will soon come, now that cases can be so simplified by the removal of stertor, that by a careful consideration of the functions of the various nerves a very accurate diagnosis and prognosis will be arrived at even in the early stage of apoplexy.

CASE 3.—Mrs. W—— was found lying on her back breathing stertorously and with great difficulty; the trachea was filled with frothy mucus, and she was almost in a state of collapse. She was turned on her right side, when the stertor and difficulty of breathing ceased. Seventeen hours afterwards she was lying quiet and comfortable ; the depending cheek was dusky and congested, the upper cheek pale. She was now turned on her left side ; the difficult breathing immediately returned, and *both* sides of the face became highly congested ; the breathing was shallow, and large moist râles were present in both sides of the chest ; on resuming the original position all difficulty ceased. She died the next morning.

The following case would, I believe, have terminated fatally but for the careful management of position :—

CASE 4.—Mrs. S.—— was seized on Sept. 24, 1867, with left hemiplegia. She was unable to speak or to masticate, and could only swallow liquids with much difficulty ; the pulse was 80, and very feeble. She was placed on her left side. On Sept. 28 (four days after), the respiratory murmur on the left side was shallow and feeble, there were some râles, and the percussion sounds were dull. She was turned on her right side, when immediately great distress of breathing and mucous stertor supervened ; this gradually disappeared on replacing her on her left side. When turned on her back, for the use of the bed-pan, mucous stertor commenced, and it was noticed that in this position the intercostal muscles and the diaphragm acted more feebly than on the unparalysed side. On Sept. 29 there was a



little more power, and she was less excitable. The respirations, which had been 56, were now 44. She was able to remain half-an-hour on the right side before the difficult breathing commenced. The following day she was still better; and the dribbling of saliva, which had been very great, ceased, but she still had no control over her bladder or rectum.—Oct. 6: During the last week she has slowly improved. Several experiments of change of position have been made, and it was found that as her power returned she could remain longer on the right side before the difficulty of breathing commenced, and now can remain an hour and a half in this position. She speaks better, eats and sleeps better. Tongue is cleaning; bowels open, but she is still unable to retain her water. Pulse 80, respiration quiet and natural; on the right side the respiratory murmur is natural, on the left there are still a few râles, but the resonance is good, and the air enters more freely. Power is returning to the hand and face.—March, 1870: The patient is still alive and well, but has a good deal of weakness on the left side.

*Remarks.*—In its early stage this case was most critical; had a little extra strain been put upon her, she must have died, and no strain could have been worse than the persistence of a condition (stertorous breathing) which would indirectly cause obstruction in the jugulars. In the supine posture, from the paralysed and insensible condition of the pharynx, much of the saliva which dribbled away in the lateral position would have entered the trachea, and added to the trouble. Sir James Simpson, in writing of the treatment of phlegmasia dolens, says: "Position is one of the most powerful means in the treatment of many diseases; attention to this point is frequently of more importance, and affords more satisfactory results, than the use of any kind or quantity of drugs." In no case is this opinion of Sir James Simpson so aptly illustrated as in certain affections of the brain and air-passages. Dr. Bence Jones, in writing to me on this subject, says: "The case I mentioned to you was one of extreme hemiplegia of the right side, for the first few hours with perfect clearness of mind, passing in twelve

hours into complete coma, with the most intense and distressing stertor, lasting for many hours. This was immediately stopped by changing the position of the patient to one side. But it had no known effect on the progress of the case. The total duration, I think, was not forty-eight hours. The gentleman was about sixty-two, pale and rather sickly, and had always feared apoplexy."

Mr. Reid, of Canterbury, and many other of my friends, have reported to me cases of apoplexy in which, on the change of position, stertor has ceased, and the patients have died peacefully and quietly, to the great relief of the distressed and sorrowing relatives. I have never in my own practice failed to put an end to stertor by position and management.

CASE 5.—At a medical meeting in May, 1862, after urging my views on stertor, Mr. Francis, of Boughton, stated that he had just left an old lady dying from apoplexy, who had been in a state of stertor for many hours. At the November meeting in the same year he informed us that the old lady was still alive and well. On his return home he found her just as he had left her, dying as he believed. He changed her position, the stertor ceased, and she gradually but perfectly recovered.

CASE 6.—Mr. Eustace Carver, of Melbourne, a former house-surgeon at the Middlesex and Nottingham hospitals, and a careful observer, was called to Captain B——, in deep stertor and moribund. Life was evidently more a question of minutes than hours. The position was changed, the stertor ceased, and the old gentleman lived nine months.

CASE 7.—Dr. Lewis, of Folkestone, was sent for to Mrs. F——, aged sixty-seven. He found her in bed in the apoplectic condition. There was total loss of consciousness, the pupils were fixed, but there was slight reflex action on touching the eyeball, the face was turgid, the cheeks were puffed out on expiration, and there was deep pharyngeal stertor. On being placed on her side the stertor ceased and she gradually improved. In twelve hours she had perfectly recovered consciousness, the respiration was normal, the face

very pale, the pulse quick and feeble ; there was no paralysis. The action of the heart was feeble, but there was no murmur.

CASE 8.—I was called in August, 1859, to a boy who had fallen on his head from a height. I found him lying on his back snoring, senseless, and collapsed ; pulse irregular, and pupils alternately contracting and dilating. The mouth was half full of vomited matter. On turning him on his side the snoring (palatine stertor) ceased, he was sick several times with comparative ease. Presently he began snoring whilst he was on his *side*, his chin was bent upon the sternum ; on straightening the neck he was quiet. The boy slowly recovered. On three different occasions in my own practice I have been summoned to cases of apoplexy with stertor, in which the patients recovered, two with, and one without paralysis.

Case 4 demonstrates that as power returns to the brain, the pneumogastric, and probably also the sympathetic nerves regain their power, and effusion into the lung ceases ; and, moreover, that the lung is not injured by remaining inactive, and filled with mucus for a long period.

The consideration last mentioned induced me to adopt position in all conditions of the lungs in which much mucus was secreted. In April, 1866, a little child, three months old, after having suffered from slight catarrh for a few days, was seized with difficulty of breathing at night. When I arrived in the morning the child was livid, the eyes sunken and half closed, and the pulse remarkably slow, feeble, and irregular. The child breathed with great difficulty, and had a loose mucous cough, feeble and ineffective. The quantity of mucus in the chest was so great that the child could not inspire, and appeared dying. It was turned on the right side, ammonia applied to the nostrils, and ten drops of brandy administered every quarter of an hour. On the following day it breathed with greater ease, the expression had improved, and the pulse, though still slow, had a little more power. The air now entered the left side freely, and the râles were few ; no breathing at the right side. The child

gradually recovered, but for several days there was bronchial breathing, and bronchial voice on the right side. Before the child was turned on the right side there was no difference on auscultation between the two sides.

In bronchitis generally, and especially in the bronchitis of the old, I endeavour to leave one lung free for breathing, and then, as vital power returns, the position is gradually changed.

In the *convulsions of children* there is often a large flow of saliva and secretion in the bronchial tubes. This becomes immediately churned into foam, and greatly impedes respiration. In the lateral position all this drains away, the breathing is freed, and I have often seen recovery commence immediately.

In *epilepsy* the fit will often cease at once by removing stertor, but here it requires a little more management than placing the patient on his side, for the spasms of the mouth, tongue, and fauces require opposing by little mechanical contrivances.

In May, 1866, I was sent for to a phthisical patient who was said to be dying from hæmorrhage. I found him lying upon his back, partially elevated by pillows, and apparently breathing his last. His face was cold and ghastly, his jaw dropped, and his eyes widely opened and staring. He made a few unsuccessful efforts to inspire, when some large mucous râles were heard in the trachea. The pulse could just be felt feebly flickering. He was immediately placed well over on the right side, and ammonia was applied to the nostrils. A little brandy and water was introduced into the mouth, but there was no effort to swallow. A handkerchief was, however, soaked in brandy, and a portion left in the mouth. The mouth and tongue were quite cold. In a minute or two the respirations became longer, and air could be heard entering the uppermost lung, but none entered the lower. Gradually the râles diminished in the upper lung, air entered more freely, and the percussion sounds became more resonant. Consciousness, which had been utterly lost, gradually returned, and by the following morning he was



perfectly himself, and could have transacted any business. He lived four days, breathing with one lung only.

On our arrival, my friend, Dr. Lewis, who was with me, was so convinced that death must take place immediately, that he thought all our efforts to prolong life would be unavailing.

On the subject of drowning I do not propose to consider the various modes of resuscitation, but to comment merely upon the fluid contained in the lungs of drowned persons. The Committee of this Society on Drowning came to the conclusion "that it was the entrance of fluid into the lungs, and the effects thereby produced, which was the cause of death in drowning." Professor Caspar, as a result of his prolonged researches on drowned persons, asserts that as a rule water exists in the lungs in the form of fine vesicular foam, even in those who have never come to the surface after once being submerged.

In 1861, a woman who had been taken out of the Serpentine and treated by the hot bath at the Receiving-house, was brought to St. George's Hospital about one hour afterwards. Mr. Jones, the resident medical officer, states that on admission "her breathing was fair, with loud rattling noise; her lips were livid, her pulse *very good*, her surface and extremities very cold; she was sensible and able to speak." Warmth and appropriate measures were employed, but in half an hour Mr. Jones was suddenly summoned, and only arrived to see her draw her last breath. The Marshall Hall method was immediately employed for half an hour, without the slightest signs of recovery, *but a large quantity of frothy fluid* came from the mouth. At the post-mortem examination next day, it was reported that "both lungs contained an immense quantity of frothy fluid, the bronchi were filled with fluid and injected." In this case the lungs were loaded with and paralysed by water. There cannot be a doubt that the Marshall Hall method would have unloaded the lungs, but I cannot doubt, also, that had she been placed on one side on her arrival at the hospital the upper lung would have cleared and acted quite sufficiently to sustain life. A lung

containing frothy fluid does not clear immediately ; the bells of foam must become gradually condensed and ooze slowly away, and to assist this nothing is more adapted than the Marshall Hall method.

Dr. Trollope, of St. Leonards-on-Sea, was called to a man who had been taken out of the sea. The man could speak a little, and vomited a quantity of water ; but he rapidly became worse, insensibility came on, the breathing was slow and faint, and the pulse flickering.

The Sylvester method was being used, and Dr. Trollope persisted in it for some few minutes. "Meanwhile," Dr. Trollope reports, "his respiration had ceased, beyond a slight mucous rattle in the windpipe ; his heart's action could not be felt ; jaw clenched, and lips livid. . . . I then, finding these alarming symptoms supervening in spite of the persistence in Dr. Sylvester's method, immediately had recourse to Dr. Marshall Hall's prone and postural, or 'ready,' method, and was gratified to find fluid escape from the mouth each time the body was laid on the chest, and respiration gradually set up, commencing with long-drawn respirations, or rather gaspings, at intervals. I persevered in the prone and postural movements for three-quarters of an hour, till respiration was thoroughly and satisfactorily established. The man then again vomited between a pint and a quart of water, and was afterwards able to swallow a few tablespoonfuls of tea, and went on satisfactorily."

In March, 1862, I was called to a man who had been knocked into the sea by a heavy chain. It was calculated that he had been under water three minutes. On getting him ashore he was believed to be dead, but one of the men thought "they ought to get the water out of him," and so proceeded to roll him from side to side, and whilst this was done, a quantity of water was expelled from the mouth, and they perceived some attempt at breathing.

A few minutes after this I was on the spot, and found the man apparently dying, making occasional and feeble attempts to breathe, with a very feeble and irregular pulse. He was lying on his side with his head upon a coat, and a



quantity of froth tinged with blood lying on the coat in the neighbourhood of his mouth. I observed that clear water and froth welled out of his mouth at the end of every inspiration. Active friction of the limbs, hot bottles and bricks, were carefully applied, and ammonia to the nostrils. Nearly an hour elapsed before we thought it possible he could live. He then began to moan, and in a short time a small quantity of brandy was swallowed.

In July, 1864, a man was capsized in a boat at sea. After being in the water some time he was picked up and rowed ashore. On arrival he was cold and livid, but breathing with great labour. He was immediately turned on his side by the coastguardsmen, and a quantity of frothy fluid came from the mouth. He was taken to an inn, where he was kept on his side, and where I saw him a quarter of an hour afterwards. He was then breathing with difficulty. A fine white froth, almost like milk, was oozing from his mouth and nose; his face was very livid, and meaningless in expression; his breath was cold; the limbs and body generally were almost stone cold; the pulse could not be felt. There were a few moist râles in the left side of the chest, the side which was uppermost, but the breathing was tolerably free; the breathing on the side upon which he lay was very feeble and obscure, and moist râles more abundant. He could not be roused. In half an hour he became a little restless, and then vomited a quantity of water. The pulse could now be felt, but not counted; this gradually improved. Attempts at vomiting supervened, and occasionally a partial restoration to consciousness. After another attack of vomiting, the pupils, which had been widely dilated, became contracted, and he went off into a sound sleep. He passed a most trying night from restlessness, and pain at the epigastrium; and the next day he was still livid, but better and easier. The following day pleuro-pneumonia of the right side (that which was downwards) supervened. From this he slowly recovered.

There are many interesting details connected with these cases of drowning which for brevity's sake I omit; but the

cases, I hope, illustrate sufficiently that in drowning there is *some* fluid in the chest, and that all methods of resuscitation which do not provide for the removal of this fluid are utterly valueless. For my own part, my increasing experience only tends to prove that there is as yet no known method equal to that of the Marshall Hall method.

Independently of its effect upon stertor, "position" has a direct influence in many conditions *allied* to the apoplectic, such as chloroform poisoning, drunkenness, &c. &c. ; and I have observed that in cases of great exhaustion the change from the back to the side is accompanied by immediate and great relief ; the breathing, from having been carried on with evident effort, has become at once peaceful and easy.

During sleep, when the vital powers are resting, it is not the *back*, but the *side* which is selected as Nature's position ; and I believe the explanation to be that on the back the diaphragm has to lift the liver and abdominal organs with each respiration, whereas on the side—especially the right side—the liver lies practically on the bed, and the diaphragm can do its work without oppression.

The general conclusions which may, I think, be fairly deduced from the present communication are :

1. That a "laryngeal stertor" may be added to the three forms I formerly defined.

2. That the three forms of stertor which have a most important connection with the apoplectic state are the palatine, pharyngeal, and mucous stertor.

3. That these three varieties, whatever their remote cause, are the immediate result of a local mechanical condition—a condition which may always, and at once, be changed to the great relief of the patients, and sometimes to their permanent recovery.

4. That it is necessary to keep the patient on one side, and that the paralysed side should be downwards.

5. That mucus and other fluids gravitate into and fill up the lower lung ; and therefore that if the sides be reversed the mucus will find its way into the opposite lung.

6. That the fluid, crossing from the large bronchi of one lung to those of the opposite, becomes churned into foam and causes dangerous obstruction to the respiration.

7. That the lung is not injured by remaining inactive and filled with mucus for a long period.

8. That these principles apply to all conditions in which mucus or fluid exists in the lungs, and also to all conditions allied to the apoplectic, whether there be mucus or not.



Feb 3. 85.  
Dear Mr. Bryant

I hope you will read Dr  
Howard's letter in yesterday's  
"Journal" & that you did  
read Dr. Hewitt's Paper on  
the same subject in "Journal"  
Jan: 26<sup>th</sup> " " "  
Dr. Howard's vague hitting  
out about alleged C. A. West's  
alleged statements <sup>is</sup> ~~is~~ sure  
is in very bad taste, & of  
course prevents any one from

answering. I think his offer  
in the end of his letter might  
be accepted by Mr. S. & Co.  
It would be quite needless  
that he should repeat his  
experiments & the exact  
confirm all I have said  
myself. A Com<sup>ee</sup> of  
3 or 4 to hear what we each  
have to say would soon  
settle the matter if I do  
~~think it~~, but necessarily  
face to face — that might  
be unpleasant, & then perhaps  
he might be pleased to  
append the foot-note



20m Weddings of the Royal Med: Socy  
May 14<sup>th</sup> 1878. Vol: VIII. p. 331.

~~The facts~~ The object of this paper is to give the results of various & repeated experimental experiments. The facts the presented confirm the alleged inspiratory obstruction from the tongue, epiglottis, & velum palati in apparent death, in the ordinary supine position, & show how such obstruction is promoted by the customary flexion of the head & neck. Nay Reaction.

When the boyie, however, was seen  
that among its retreat had closed by which  
more the spirit's behavior was lifted.